



Part Hawkesbury
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D2891-1
Job Sheet 165579



Part No: D2891-1

Job Qty: 10 ea

Part Name: Support 2.25



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 9/30/17

Job Tracking No:

Due Date: 10/31/17

Created By: Mario Poulin

Type: Stock

Description:

Note: DWG REV B IPP C 02.11.26 Added P/O KJ IPP D 08.03.19 Re-format EC verified: DD IPP Rev:E 11.08.04 as per dwg rev.B DD verf:EC

Ship Via:

Bill of Materials

Part/Part Name	Part Note	Serial No	Quantity	Location
D2891-1	DWG REV B IPP C 02.11.26 Added P/O KJ IPP D 08.03.19 Re-format EC verified:		0.000	
Support 2.25	DD IPP Rev:E 11.08.04 as per dwg rev.B DD verf:EC			
DSK076	DWG REV A IPP rev A. 08.03.13 new issue EC		0.000	
D2891-1 Turning Detail				

Job Routing

Op No	Operation	Qty	Due Date	Standard		Workcenter/Supplier	
				Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time
90	Start up Operation	10 Ea	10/30/17	0.00	0.00	Start up container	
100	CNC Vertical Machining	10 pcs	10/30/17	0.41	10.49	HAAS 1	
110	QC	10 pcs	10/30/17	0.00	0.00	QC2	
120	QC	10 pcs	10/30/17	0.00	0.00	QC8	
130	Crosstubes	10 pcs	10/31/17	0.00	0.64	Crosstube	
140	QC	10 pcs	10/31/17	0.00	0.00	QC3	
170	Packaging	10 pcs	10/31/17	0.00	0.00	Packaging3	
180	QC21-SA	10 Ea	10/31/17	0.00	0.00	QC21	

Part Op 100 - 1-Machine as per Folio FA046

Descriptions: 130 - Per note 8 on page 1 of dwg D2891, Prep inner concave surface of support and apply 3M Scotch-Weld as per dwg.

24H of cure time. 138381 *x p 11/18

170 - LOCATION : LG052

Job Allocations

Operation	Component Part	Required	Inventory	Allocated	Std Qty
90-Start up Operation	DSK076	5	0	0	0

Part Specifications

Specifications could not be found.

DART
AEROSPACE
S003359

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K64 1K7
CANADA
TEL.: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com



Support 2.25

PART NO: D2891 - 1
Revision:
Operation: Start up Operation
Quantity: 10
Change No:

Mfg Date: 10/29/17 Job No: 165579
--

Work Order ID 165579

165579

Page 1

Monday, August 28, 2017 11:43:47 AM

Item ID: D2891-1 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Support 2.25
 Start Date: 9/28/2017 Start Qty: 10.00 ***10*** Cust Item ID:
 Required Date: 10/12/2017 Req'd Qty: 10.00 ***10*** Customer:
 Reference:

Approvals: Process Plan: DAS 21 Date: AUG 29 2017 Tooling: _____ Date: _____ Run Start ***NR1***
 QC: 9-89 Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D2891	B								

100	HAAS CNC VERTICAL MACHINING #1	2.12							
100									
HAAS I	Memo	3.24							
HAAS CNC vertical machine #1	1-Machine as per Folio FA046 2-Deburr								
						10x	Ø		mm 2017/10/29
110	QC2- Inspect parts off machine FAI/FAIB	0.00							
110									
QC	Memo	0.10							
Quality Control									
120	QC8- Inspect parts - second check	0.00							
120									
QC	Memo	0.20							
Quality Control									
						10	Ø		mm 12/11/10

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐	OTHER : _____			

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Packaging

LOCATION : LG052

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Work Order ID 165579***165579***

Page 3

Monday, August 28, 2017 11:43:47 AM

Item ID: D2891-1**Accept*****N900040100*****Setup Start *NS1*****Revision ID:****Stop *NS2*****Item Name:** Support 2.25**Start Date:** 9/28/2017 **Start Qty:** 10.00***10*****Cust Item ID:****Required Date:** 10/12/2017 **Req'd Qty:** 10.00***10*****Customer:****Reference:****Approvals:** **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____**Run Start *NR1*****QC:** _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____**Stop *NR2*****Sequence ID/
Work Center ID****Operation
Description****Set Up/
Run Hours****Tool ID****Tool #****Plan
Code****Accept
Qty****Reject
Qty****Reject
Number****Insp.
Stamp**

180

QC21- Final Inspection - Work Order Release

0.00

180

QC

Memo

1.00

Quality Control

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Picklist Print

Monday, August 28, 2017 11:43:50 AM

Work Order ID: 165579

165579

Parent Item: D2891-1

D2891-1

Parent Item Name: Support 2.25

Start Date: 9/28/2017

Required Date: 10/12/2017

Start Qty: 10.00

Required Qty: 10.00

Comments:

IPP C02.11.26Added P/OKJ

IPP D 08.03.19 Re-format EC verified: DD

IPP Rev:E

11.08.04 as per dwg rev.B DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

DSK076

Manufactured

No

110

Each

9.0000

0.5

5

DSK076

D2891-1 Turning Detail

mm 2017/10/29

Location

Loc Qty

Loc Code

MAT060

9

161599

3

164514

6



*DSK 076
164942*

5

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐	OTHER : _____							

DART AEROSPACE LTD		Work Order:	165579
Description: Ø2.250 Support		Part Number:	D2891-1
Inspection Dwg: D2891	Rev: B	Page 1 of 1	

FIRST ARTICLE INSPECTION DIMENSION SHEET

				Record Actual Dimensions				
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	5
HAAS Section								
AA	0.188	0.193		.188	.188	.188	.188	.188
AB	0.240	0.260		.251	.250	.250	.250	.250
AC	0.115	0.150		.128	.128	.127	.126	.127
AD	0.040	0.060		.053	.054	.054	.055	.055
AE	0.010	0.020		.015	.015	.015	.015	.015
AF	0.240	0.260	rayon	.250	.250	.250	.250	.250
AG	0.290	0.310		.298	.297	.299	.296	.295
AH	0.115	0.150		.140	.139	.140	.141	.140
AI	0.454	0.474		.460	.461	.460	.460	.457
AJ	2.779	2.789		2.783	2.782	2.781	2.783	2.783
AK	0.240	0.260	rayon	.250	.250	.250	.250	.250
AL	1.002	1.042		1.040	1.036	1.038	1.040	1.035
AM	0.053	0.073	rayon	.069	.069	.069	.069	.069
AN	0.257	0.262		.257	.257	.257	.257	.257
AO	1.663	1.683		1.674	1.675	1.671	1.676	1.674
AP	0.053	0.073	rayon	.063	.063	.063	.063	.063
AQ	0.022	0.042	rayon	.032	.032	.032	.032	.032
AR								
AS								
AT								
Accept/Reject								

Measured by:	<i>M.H.</i>	Date:	2017/10/29
Audited by:	<i>mm</i>	Date:	17/11/10
Preliminary Approval:		Date:	

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	
B	08.04.21	Reformat	KJ/JLM	
C	12.09.26	Dwg Rev updated	KJ	<i>[Signature]</i>

DART AEROSPACE LTD		Work Order:	
Description: Ø2.250 Support		Part Number:	D2891-1
Inspection Dwg: D2891	Rev: B	Page 1 of 1	

FIRST ARTICLE INSPECTION DIMENSION SHEET

				Record Actual Dimensions				
Dim	Min	Max	Go/No Go Gauge	6	7	8	9	10
HAAS Section								
AA	0.188	0.193		.188	.188	.188	.188	.188
AB	0.240	0.260		.250	.250	.250	.249	.248
AC	0.115	0.150		.127	.124	.124	.127	.124
AD	0.040	0.060		.055	.054	.053	.056	.053
AE	0.010	0.020		.015	.015	.015	.015	.015
AF	0.240	0.260	region	.250	.250	.250	.250	.250
AG	0.290	0.310		.296	.295	.295	.294	.293
AH	0.115	0.150		.140	.139	.138	.140	.142
AI	0.454	0.474		.458	.458	.458	.458	.458
AJ	2.779	2.789		2.785	2.782	2.785	2.783	2.785
AK	0.240	0.260	region	.250	.250	.250	.250	.250
AL	1.002	1.042		1.032	1.034	1.034	1.035	1.036
AM	0.053	0.073		.069	.069	.069	.069	.069
AN	0.257	0.262		.257	.257	.257	.257	.257
AO	1.663	1.683		1.675	1.676	1.677	1.676	1.676
AP	0.053	0.073		.063	.063	.063	.063	.063
AQ	0.022	0.042		.032	.032	.032	.032	.032
AR								
AS								
AT								
Accept/Reject								

Measured by: <i>MM</i>	Date: <i>2017/10/29</i>
Audited by: <i>M. L.</i>	Date: <i>17/11/10</i>
Preliminary Approval:	Date:

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	
B	08.04.21	Reformat	KJ/JLM	
C	12.09.26	Dwg Rev updated	KJ	

NOTES:

1) MATERIAL: 17-4 PH STAINLESS STEEL, H900 OR H925 CONDITION
MIN UTS = 170 KSI (38 HRC)
(REF DART SPEC. D6104)

2) FINISH: NONE

3) TOLERANCES: PER DART QSI 018 (REF X.XXX = ± 0.010) UNLESS OTHERWISE NOTED

4) UNITS: INCHES UNLESS OTHERWISE NOTED

5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX

6) IDENTIFICATION: DART LOGO (PER DART SUPPLIED GRAPHIC) AND PART NUMBER IN THIS AREA WITH 0.125 HIGH LETTERING
0.010-0.020 DEEP, PER DART QSI 044 6.3.

7) WEIGHT: 0.38 lb

8) FOR THE ENTIRE INNER CONCAVE SURFACE:
ABRADE SURFACE WITH 400-GRIT SANDPAPER. REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY 0.03" TO 0.05" THICK LAYER OF 3M SCOTCH-WELD 2216 B/A ADHESIVE TO MATING SURFACE OF SUPPORT. ALLOW TO CURE FOR 24 HOURS.

SHOP COPY

RETURN TO
ENGINEERING

UNCONTROLLED COPY

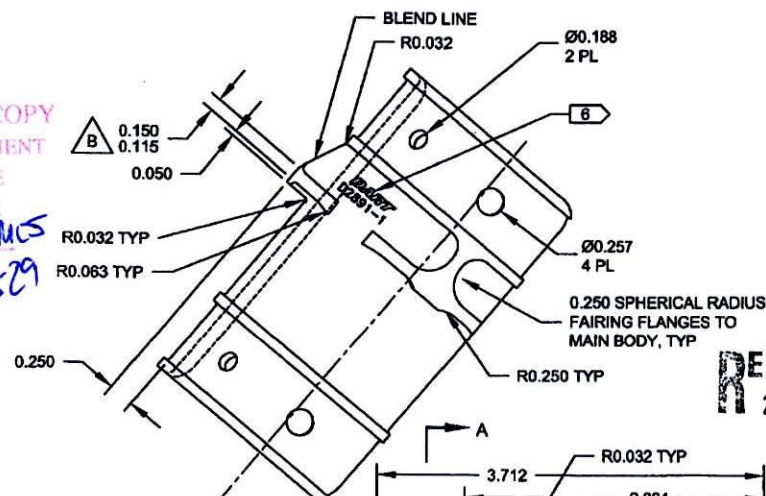
SUBJECT TO AMENDMENT

WITHOUT NOTICE

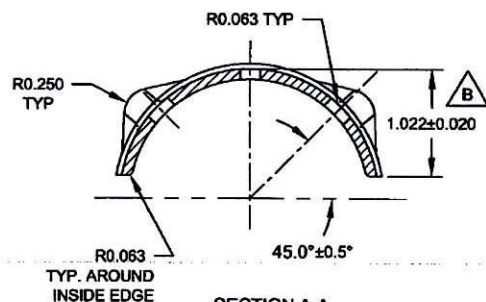
WORK ORDER

NO. 165579 M/S

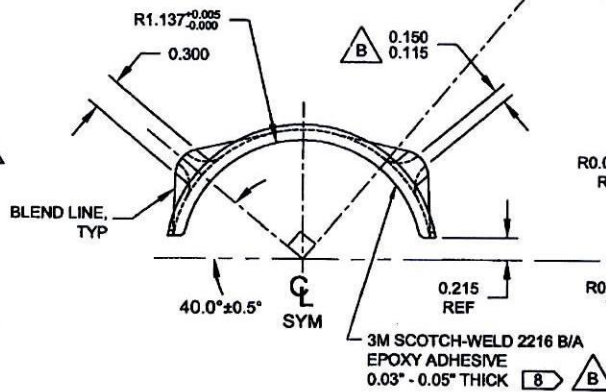
170829



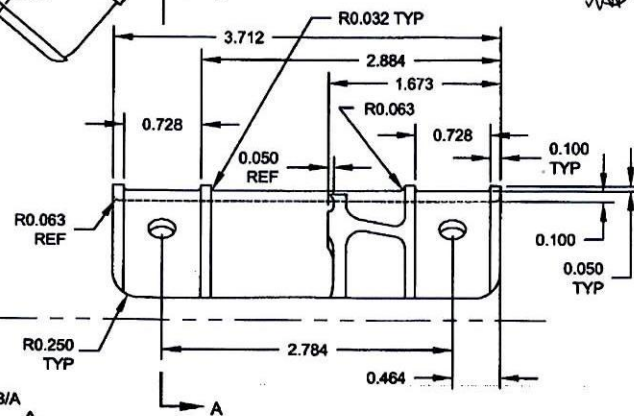
RELEASED
2011-07-28



SECTION A-A



D2891-1 SUPPORT



B	REV. FINISH, ADD 3M 2216, ADD H925 MAT'L OPTION, UPDATE TOLERANCE (ZN D4-1,B4-1,B6-1)	CP	11.07.15
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	11.07.15		
DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D2891 TITLE Ø2.250 SUPPORT SCALE NTS REV. B SHEET 1 OF 1 COPYRIGHT © 2008 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			